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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,121	12/17/2003	Hiroshi Gotoh	246602US2	6032

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EXAMINER	
NGUYEN, JOSEPH H	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 01/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,121	GOTOH ET AL.	
	Examiner	Art Unit	
	Joseph Nguyen	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *17-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5,8,10,15 and 16* is/are rejected.

7)☒ Claim(s) *6,7,9 and 11-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/4/04, 12/17/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 1-16, 23-25 in the reply filed on 12/01/2004 is acknowledged. The traversal is on the ground(s) that a search of the elected claims would also include the classes and subclasses appropriate for searching the method claims, and so then would be no undue burden if all of the claims were examined together. This is not found persuasive because as an alternative in claim 17, the second electrode can be heated at a temperature other than 150 to 400 C after the formation as recited in claim 17, and it does not structurally distinguish from the device of claim 1. Thus, the device claims are in class 257 whereas the method claims are in class 438. A search of the device and method claims in both classes 257 and 438 would be a due burden to the Examiner. Therefore, claims 1-16, 23-25 are prosecuted and claims 17-22 are withdrawn from consideration.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim1, 3, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al..

Regarding claim 1, Inoue et al. discloses on figure 2 an electronic device comprising a first electrode 13 consisting of a metal oxide; and a second electrode 8 consisting of an aluminum alloy film (col. 5, lines 49-56), said second electrode being directly contacted and electrically connected to said first electrode 13; wherein in the contact interface between said aluminum alloy film 8 and said first electrode 13, at least a part of alloy components constituting said aluminum alloy film exist as a precipitate or a concentrated layer.

Note that the aluminum alloy film 8 is clearly a concentrated layer at the contact interface as disclosed in col. 5, lines 49-56.

Regarding claim 3, Inoue et al. discloses that said metal oxide is indium tin oxide (col. 5, lines 52-54).

Regarding claim 15, Inoue et al. discloses on figure 2 said electronic device comprise a thin film transistor arranged on a glass substrate 1 and said thin film transistor is electrically connected to said first electrode 13 through said aluminum alloy film.

Regarding claim 16, Inoue et al. discloses on figure 2 said first electrode 13 is a pixel electrode and said electronic device is a display device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of Yamamoto et al..

Regarding claim 2, Inoue et al. discloses on figure 2 substantially all the structure set forth in the claimed invention except said aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni. However, Yamamoto et al. teaches that said aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni (col. 2, lines 39-44). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue et al. by having said aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni for the purpose of reducing hillocks and lowering the electrical resistivity of an electrode as taught by Yamamoto et al.

Regarding claim 4, Yamamoto et al. teaches that said aluminum alloy film contains at least Ni as its alloy component (col. 2, lines 39-44).

Regarding claim 5, Yamamoto et al. teaches that said aluminum alloy film further contains as its alloy component, at least one element selected from the group consisting of Fe in the range of 0.1 to 6 at % (col. 2, lines 39-44).

Note that Yamamoto et al. teaches that an Al alloy contains one or more alloying elements (col. 2, lines 39-44).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above, and further in view of Takayama.

Regarding claim 8, Inoue et al. discloses on figure 2 substantially all the structure set forth in the claimed invention except the electrical resistivity of said aluminum alloy film being not larger than 8-μΩ cm. However, Takayama teaches that the electrical resistivity of said aluminum alloy film being not larger than 8-μΩ cm (col. 7, lines 32-35). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue et al. by having the electrical resistivity of said aluminum alloy film being not larger than 8 μΩ cm for the purpose of eliminating hillocks and pinholes in the conductive line material as taught by Takayama (col. 7, lines 32-35).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied to claim 1 above.

Regarding claim 10, Inoue et al. discloses on figure 2 substantially all the structure set forth in the claimed invention except the area factor of said precipitate exceeding 0.5%. However, it would have been obvious to one having ordinary skill in

the art at the time of the invention was made to modify Inoue et al. by having the area factor of said precipitate exceeding 0.5% for the purpose of improving the electrical connect with an electronic device, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Yamamoto et al..

Regarding claim 23, Inoue et al. discloses on figure 2 substantially all the structure set forth in the claimed invention (see rejection of claim 1 above) except an aluminum alloy film containing 0.1 to 6 at % of Sm. However, Yamamoto et al. teaches an aluminum alloy film containing 0.1 to 6 at % of Sm (col. 2, lines 41-44). Note that Yamamoto et al. teaches that an Al alloy containing one or more alloying elements selected from rare earth elements in a total amount from 0.05 to 15 at %, and Sm is a rare earth element.

In view of such teaching, it would have been to one of ordinary skill in the art at the time the invention was made to modify Inoue et al. by having an aluminum alloy film containing 0.1 to 6 at % of Sm for the purpose of reducing hillocks and lowering the electrical resistivity of an electrode as taught by Yamamoto et al.

Regarding claim 25, Inoue et al. discloses on figure 2 substantially all the structure set forth in the claimed invention (see rejection of claim 1 above) except said

aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni. However, Yamamoto et al. teaches that said aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni (col. 2, lines 39-44). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue et al. by having said aluminum alloy film containing at least one element in the range of 0.1 to 6 at % as its alloy component, the element being selected from the group consisting of Ni for the purpose of reducing hillocks and lowering the electrical resistivity of an electrode as taught by Yamamoto et al.

Note that the phrase "said second electrode is heated at 150 to 400C after the formation thereof" is merely product by process and therefore does not structurally distinguish the claimed invention from the applied prior art herein.

Allowable Subject Matter

Claims 6, 7, 9, 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-

1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN
January 27, 2005

ALLAN R. WILSON
PRIMARY EXAMINER